TOPFIELD™

Stab - USALS
UNIVERSAL SATELLITES
AUTOMATIC LOCATION SYSTEM

DVB
Digital Video
Broadcasting

DiSEqC 1.2

The User's Manual
Personal Video Recorder

TF4000PVR

-Personal Video Recorder

TF4000PVR CoCI

-Personal Video Recorder
-Embedded Conax

ZAP REC

DOLBY DIGITAL BITSTREAM OUT

Please read this User's Manual carefully.
The menu structure and specification can be changed without notice.

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CAUTION

RISK ELECTRIC SHOCK
Do NOT OPEN

This symbol indicates "dangerous voltage" inside the product that presents a risk of electric shock or personal injury.

This symbol indicates important instructions accompanying the product.

CAUTION: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

Warning!

Please do not insert metal or alien substance into the slots for the Modules and Cards.
In doing so can cause damage to the PVR and reduce its life span.

WARNING Warning WARNING Warning WARNING

Please read the following recommended safety precautions carefully for your safety.

MAINS SUPPLY : 90-250V AC 50/60 Hz.

OVERLOADING : Do not overload wall outlets, extension cords or adapters as these can result in fire or electrical shock.

LIQUIDS : Keep liquids away from the PVR.
The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

SMALL OBJECTS : Coins or other small objects must be kept away from the PVR as they can fall through the ventilation slots of the PVR and cause serious damage.

CLEANING : Disconnect the PVR from the wall socket before cleaning it. Use a dry cloth lightly dampened(no solvents) to clean the exterior of the PVR.

VENTILATION : Do not block the decoder's ventilation slots. Ensure that a free airflow is maintained around the PVR. **Never** stand the PVR on soft furnishings or carpets. Do not use or store the PVR where it is exposed to direct sunlight or near a heater. **Never** stack other electronic equipment on top of the PVR.

ATTACHMENTS : Do not use any attachments that are not recommended as these may cause hazards or damage the equipment .

CONNECTION TO THE SATELLITE DISH LNB :
Disconnect the PVR from the mains before connecting or disconnecting the cable from the satellite dish. Failure to do so can damage the LNB.

SERVICING : Do not attempt to service this product by yourself. Refer all serving to qualified service agents.

LIGHTNING : It is recommended that the PVR should remain connected at all times to the mains supply and satellite dish (except when working on the LNB). However, the manufacturer's instructions for safeguarding other equipment connected to the PVR, i, e, TV set, must be followed during lightning storms. LNB and the modem telephone line are essential.

EARTHING : The LNB cable **must be earthed** to the system earth for the satellite dish.

LOCATION : Locate the PVR indoor place properly to prevent lightening, raining and direct sunlight.

INTRODUCTION

Thank you for purchasing the Personal Video Recorder (PVR).
This PVR is fully compliant with the international DVB standard and thus transmits digital images, sounds, information guides and teletext directly to your TV through the satellite. Now you can comfortably see and receive digitally transmitted music, news, movie and sports satellite broadcasts in your office or at your home. The PVR records and playback satellite broadcasts. You can enjoy interesting games embedded in PVR.

In the Channel Search section, both the automatic channel search method and the manual search mode are provided. Also it supports DiSEqC 1.2, enabling you to move your antenna in order to focus preferred satellite. You can save up to 3500 TV and 1500 Radio channels and work around with the Favorite, Lock, Delete, Move and Sort functions.
The Menu is very modern and supports different languages. All functions can be carried out using the remote control and some of the functions can also be carried out using the front panel.

The PVR is easy to use and adaptable for future advances. Please be aware that new software may change the functions of the PVR.
If you have any difficulties concerning the operation of your PVR, please refer to the relevant section of this manual, including the 'Troubleshooting'. This Manual will provide you with useful information on using the PVR.

CONTENTS

Please ensure that the following items are included with the PVR.

1) Remote control unit
2) Batteries (size AAA)
3) User's Guide (this document)

FEATURES

Fully Compliant to DVB.

Common Interface for Viaccess,Irdeto,Cryptoworks,Nagravision,Conax and Mediaguard.

Antenna/LNB control
- 22KHz mode On/Off
- 0/12V mode selection
- Automatic FEC Detection
- DiSEqC 1.0 & 1.2 compatible

Satellite/Channel support
- 3500 TV channels, 1500 Radio channels storable

Video/Audio
- Automatic PAL/NTSC selection
- Multi-lingual Audio support
- Automatic channel search

OSD (On Screen Display) support
- 256 color support.
- Multi-lingual menu text support.
- GMT and Time Offset support
- 10 favorite channel groups support
- Page Up/Page Down available on your channel list
- PIG (Picture In Graphic) support

Recording and playback
- Time shifting playback
- Recording by EPG
- Delayed Recording
- Fast and Slow Playback
- Bookmark
- Repeated Playback for selected interval
- Capable of editing recorded services
- About 12-25 hours recording capacity with a 40GB HDD

2 Tuners
- 2 Tuners for zapping while recording.
- 2 LNB inputs
- 2 RF signal loop through
- Independent LNB control

Teletext
- Software emulation mode with always VBI insertion mode on.

Games are embedded.

Embedded Conax ····· **(Embedded Conax model only)**

S/PDIF output (Digital Audio Output)

FRONT / REAR PANELS

1) Front Panel

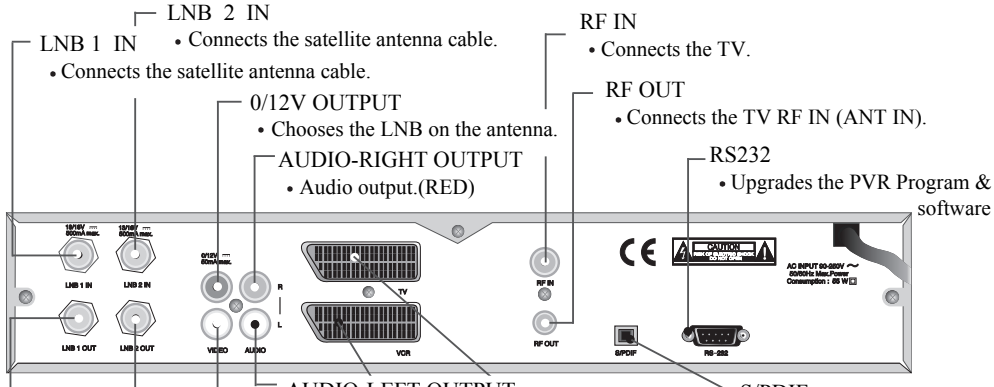
- POWER
  - The power button of STB (ON / Stand by)

- LED
  - TV / SAT
  - REMOTE
  - STAND BY

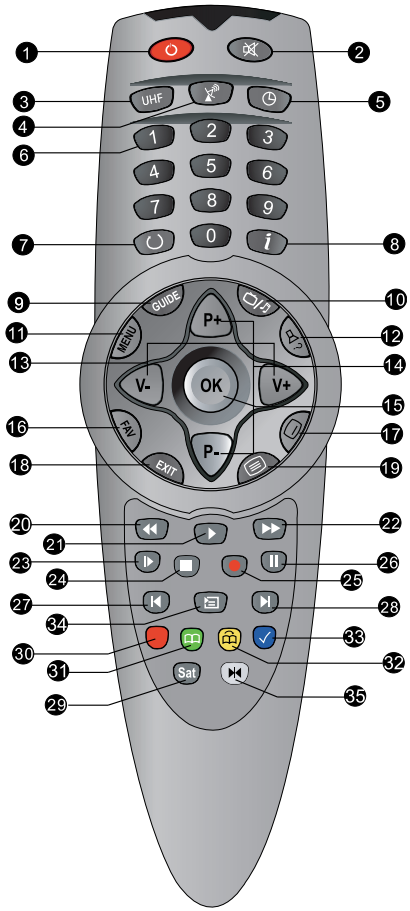
- DISPLAY
  - During the STANDBY mode, the current time is displayed.
  - When the power is ON, the current status is displayed (TV/ Radio/ Menu).

- CHANNEL
  - The channel buttons are to change channels.

2)Rear Panel


LNB 2 IN
• Connects the satellite antenna cable.
LNB 1 IN
• Connects the satellite antenna cable.
RF IN
• Connects the TV.
RF OUT
• Connects the TV RF IN (ANT IN).
0/12V OUTPUT
• Chooses the LNB on the antenna.
AUDIO-RIGHT OUTPUT
• Audio output.(RED)
RS232
• Upgrades the PVR Program & software
AUDIO-LEFT OUTPUT
• Audio output.(WHITE)
TV SCART
• Connects the TV SCART
S/PDIF
• Optical output for Digital Audio
LNB 1 OUT
• Use it to connect to another PVR or LNB 2 IN.
VCR SCART
• Connects the VCR SCART
VIDEO OUTPUT
• Video output (YELLOW)
LNB 2 OUT
• Use it to connect to another STB.

REMOTE CONTROL UNIT (RCU)



❶ POWER Button ( )
- Switches the PVR between Operation and Standby mode.

❷ MUTE Button ( )
- Enables/ Disables the Audio.

❸ UHF Button (UHF)
- Displays and alters the UHF setting in menu.

❹ TV/SAT Button ( )
- Changes the terrestrial TV and Satellite mode.

❺ SLEEP Button ( )
- Displays sleep time. When sleep time, the power automatically turns to the OFF mode and the PVR to the STANDBY mode.

❻ Numeric Buttons (0~9)
- Selects the TV or Radio service channels and individual menu options.

❼ RECALL Button ( )
- Selects the previously viewed channel.

❽ INFO Button (i)
- Displays the program information box on the screen and removes it.

❾ GUIDE Button (GUIDE)
- Displays the EPG (Electronic Program Guide) on screen only when available.

❿ TV/ Radio Button ( )
- Selects the TV/Radio mode.

⓫ MENU Button (MENU)
- Displays the Menu on screen or returns to previous menu from submenu.

⓬ SOUND Button ( )
- Selects LEFT/RIGHT/MONO/STEREO sound function.

⓭ V+/V- Buttons ( )

- Adjusts the volume (Increase/Decrease).

⓮ P+/P- Buttons ( )

- Tunes to the next or previous service. Services up or down through the available services.

⓯ OK Button ( )

- Displays Channel List on screen. Selects an item in the menu.

⓰ FAV Button ( )

- Displays the favorite channel list.

⓱ SUBTITLE Button ( )

- Selects the subtitle language list for the current service.

⓲ EXIT Button ( )

- Returns to the previous menu and the screen.

⓳ TELETEXT Button ( )

- Enables the teletext with software emulation.

⓴ Button

- Display the progress bar of time shifting or playback when no progress bar is displayed. Fast rewind when the progress bar is displayed.

㉑ Button

- Playback with normal speed.

㉒ Button

- Fast forward or fast motion playback.

㉓ Button

- Slow motion playback.

㉔ Button

- Stop playback or recording.

㉕ Button

- Start recording.

㉖ Button

- Pause.

㉗ Button ㉘ Button ㉙ Button

- The each function for above buttons is not defined yet. According to the future upgrade for the software, the buttons will be used and its function will be defined, which will be notified through our website or addendum in manual.

㉚ Button ㉛ Button ㉜ Button ㉝ Button

- Above buttons are a kind of function key. So, the fixed function in each OSD Screen can be referred in each instruction message in help window.

㉞ Button

- Display recorded service list.

㉟ Button

- Select the period for repeated playback.

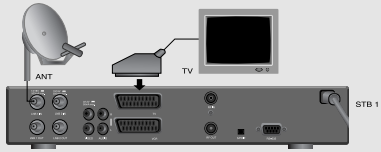
INSTALLATION (Connection)

- First, connect both the satellite antenna and the TV line to the PVR and switch the power on.
- In this manual there are some of the most common ways to connect the equipment: TV, VCR and PVR.
- There are several ways of connecting the PVR to the existing Audio/TV system. We recommend one of the following setups.
- If you have problems with your connections and need help, contact your dealer or service provider.

1. Connection to TV, VCR and Hi-Fi

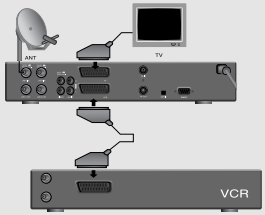
1-1) Connection to the TV with the SCART Cable.

Connect one end of the SCART cable to the TV SCART socket on the PVR and the other end to a SCART socket on the TV.



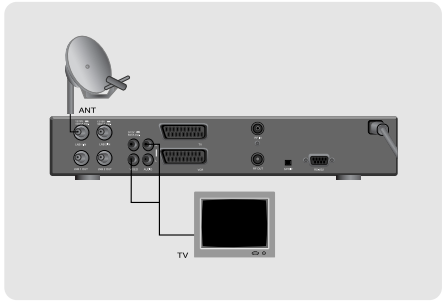
1-2) Connection to the VCR with the SCART Cable.

Connect one end of the SCART cable to the VCR SCART socket on the PVR and the other end to a SCART socket on the VCR.



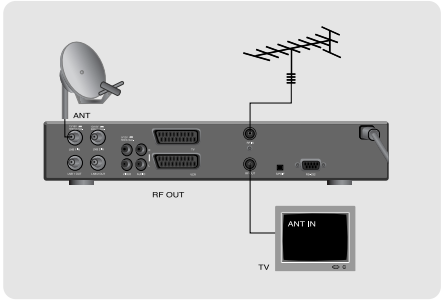
1-3) Connection to the TV with the CINCH Cable.

Connect one end (3 connectors) of the CINCH cable to the AUDIO-RIGHT (red), AUDIO-LEFT (white) and the VIDEO output (yellow) socket on the PVR.
Connect the other end (3 connectors) to the AUDIO-RIGHT (red), AUDIO-LEFT (white) and the VIDEO input (yellow) socket on the TV or Hi-Fi.



1-4) Connection to the TV using the RF cable.

Connect a terrestrial antenna to RF IN socket on the PVR.
Connect one end of the RF cable to the RF OUT socket on the PVR.
Connect the other end to the ANT IN socket on the TV.

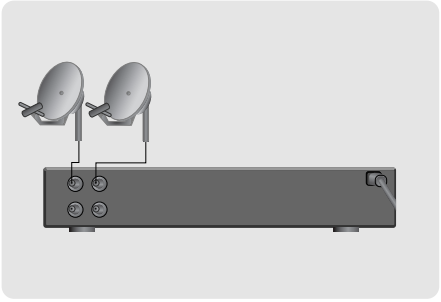


2.Connection to the Antenna.

We recommend one of the following installation diagrams because of the LNB specifications for selecting RF signal band by DC voltage and 22Khz tone.
If the PVR is installed with separated connection type, there is no restriction for zapping while recording.

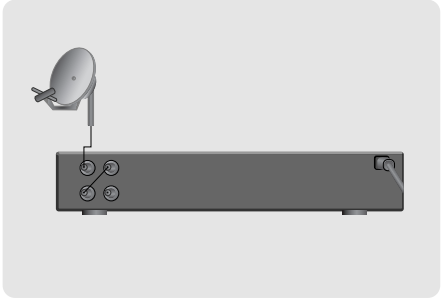
2-1) Installing the PVR with two separated Antennas.

Installing the PVR with two separated Antennas. The **Connection Type** in **LNB setting** menu should be set to **Separated**.



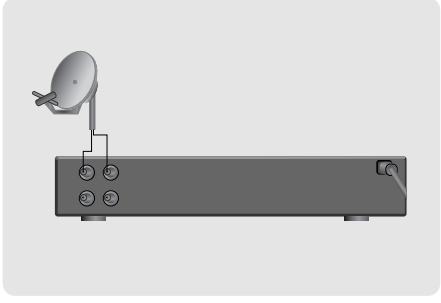
2-2) Installing the PVR with one Antenna.

The **Connection Type** in **LNB setting** menu should be set to **Loop Through**.
Tuner 1 and 2 can receive the RF signal of the same polarity and the same band.



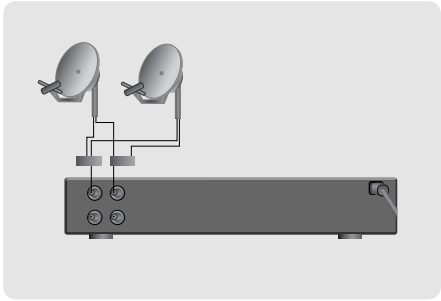
2-3) Installing the PVR with one dual LNB Antenna.

The **Connection Type** in **LNB setting** menu should be set to **Separated**.



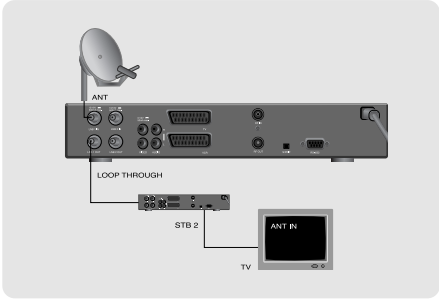
2-4) Installing the PVR with two separated dual LNB Antennas and DiSEqC switches.

The **Connection Type** in **LNB setting** menu should be set to **Separated**.



3.Connection to the other Satellite Receiver.

Connect the satellite cable to the LNB IN socket on the PVR. With other connector, connect the LNB OUT socket on the PVR and the LNB IN socket of the other PVR or STB.



GETTING STARTED

Press the **Power** button to operate the PVR from the STANDBY mode. Now, the Info Box will appear for a given time and disappear. By pressing the button, the Info Box will remain on the screen. The display time of the Info Box is adjustable under the **Installation** menu of the **Main** menu.

If the current broadcast has EPG (Electronic Program Guide) with it, press the GUIDE button to see not only the current channel's but also other channel's EPG without any time constraints. Also, press OK button to reserve and save the current service and to watch the broadcast automatically when it starts.

IMPORTANT: Before taking charge of your new PVR, some important technical settings are essential.

- First, press the **MENU** MENU button on the RCU to make the **Main** Menu appear.
- Go to the **LNB Setting** menu under the **Channel Search** item of the **Installation** menu and press OK button.
- The default PIN CODE is **0000**.
- Choose the right parameters for Satellite Name, LNB Frequency, 22KHz, 12 V, DiSEqC 1.0, and Motorized System according to your LNB and satellite settings. If the right Satellite Name and LNB Frequency were not found in the list, call the dealer for satellite information.
- Then, press the **MENU** MENU button and go back to the **Channel Search** menu.
- Set the **Search Mode** to the **Auto** mode. (A **Manual** or **Advanced Search** can always be performed later on)
- Select the **Start Search...** item and press OK button.
- The search procedure will take a while. Press OK button when the searching process is over (100%) to confirm and save the new channel list.
- For further information, please refer to the **LNB Setting** item of the MENU OPERATIONS on this manual.

Function Guide

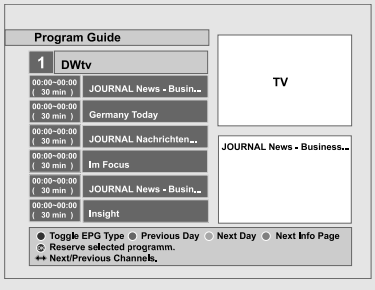
Information Box

Press i button on the RCU to see the program information. The Information box displays as follows:

- Channel Number
- Channel Name
- Detailed Program Information
- Signal Level & Quality
- Satellite Information
- Information of subtitle and / or teletext

By using V-, V+ buttons, you can see the EPG of next event. To change volume level in this mode, press V- , V+ buttons without no interval.
Press i button once more, you can see the extended infomation of the current program.
To remove info box, press i button once more.

EPG (Electronic Program Guide)


Program Guide
1 DWtv
00:00~00:00 (30 min) JOURNAL News - Busin...
00:00~00:00 (30 min) Germany Today
00:00~00:00 (30 min) JOURNAL Nachrichten...
00:00~00:00 (30 min) Im Focus
00:00~00:00 (30 min) JOURNAL News - Busin...
00:00~00:00 (30 min) Insight
TV
JOURNAL News - Business...
Toggle EPG Type Previous Day Next Day Next Info Page
Reserve selected programm.
Next/Previous Channels.

To use currently showing TV, and Radio services as well as to use next program schedules, press GUIDE button on the remote control unit.
If EPG is available on programs, you will see the detailed description of the programs, start/end time and programs schedules etc. P+ , P- and V- , V+ buttons will be used to move program and to see next program schedules. The OK button makes the reservation for the next program.
i button shows extended information of the current program.
DIR button will change the contents of EPG between TV and Radio services.

Subtitle

You can choose a language of subtitle using button on the RCU.

If a broadcaster provides subtitles, you can see symbol in the Information Box.

Teletext

If a broadcaster supports teletext, you can see symbol in the Information Box.

There are VBI insertion mode and software emulation mode in teletext.
In the VBI insertion mode, which is always on, you can watch the teletext with your TV using the RCU of your TV. To watch teletext with VBI insertion, your TV must support teletext.
In the software emulation mode, you can watch the teletext even though your TV does not support teletext. You can watch the teletext using the RCU of PVR.
Press **Teletext** button to watch the teletext with software emulation mode.
Press **Teletext** button or **EXIT** button to escape from teletext.

Soundtrack

You can choose a language of soundtrack using button on the RCU when a broadcaster supports various languages of soundtrack.

Also, it is possible to choose a mode among **Stereo**, **Mono**, **Left** and **Right** using the , buttons on the RCU.

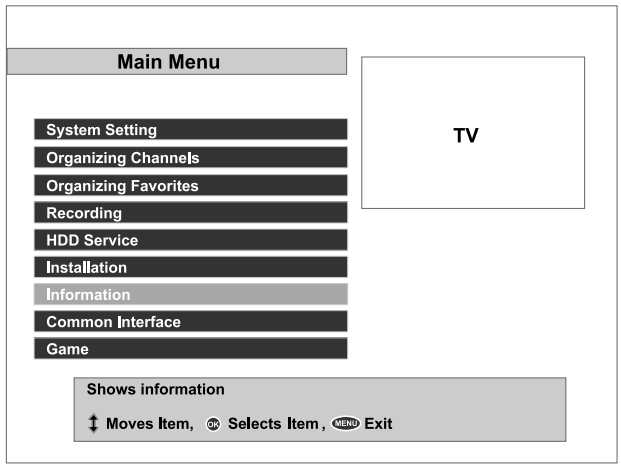
MENU OPERATIONS

Now this chapter assumes that the PVR system has been installed correctly, meaning:

* The satellite dish for the PVR has been installed, connected to the PVR and correctly adjusted to the proper satellite.
* The PVR is connected to the TV.
* The RCU has batteries and ready to control the PVR.

If the PVR has not been installed or connected properly, please refer to the **INSTALLATION** (connection) menu on this manual.

Many of the functions of the PVR are available from the **Main** Menu. Press the MENU button to open it.

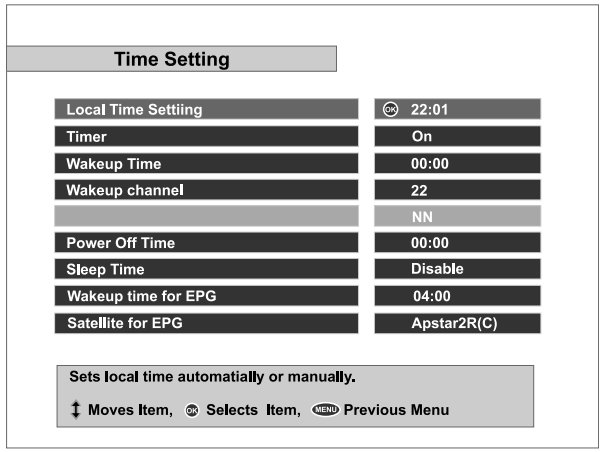


I. SYSTEM SETTING

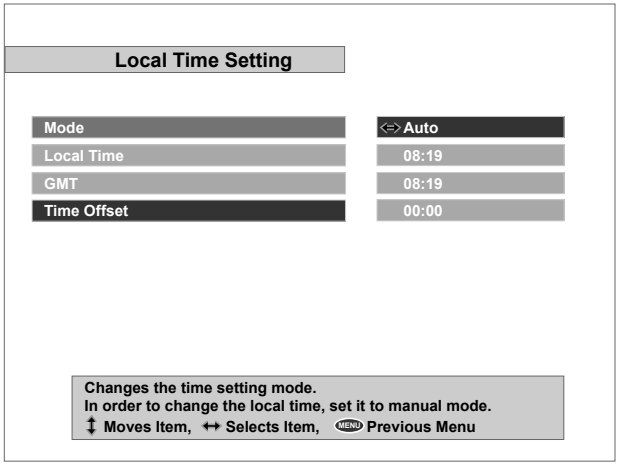
I-1 TIME SETTING

Various time modes can be set, such as the current local time, the Power On/Off time and the Sleep Time. The exact local present time can be adjusted by using the **GMT**, the **Time Offset** and the **Mode** sub menus.

PLEASE NOTE: Configure the Local Time before adjusting the Wakeup Time,Power Off Time or the Sleep Time.



A. Local Time Setting



Press OK button at **Local Time Setting** item in the **Time Setting** menu to open the **Local Time Setting** menu. Inside the **Local Time Setting** menu, there are 4 sub menus: **Mode**, **Local Time**, **GMT** and **Time Offset**.

Mode

By using the V-, V+ buttons,you can control the **Auto/Manual** mode. The **Auto** mode automatically updates the time settings by adding the GMT received from the satellite and the **Time Offset** value you have inserted. The **Auto** mode is recommended.

Local Time

The **Local Time** is adjustable only when the **Mode** is on the **Manual** mode. Adjust the current time, if necessary, by using the numeric buttons and the V-, V+ buttons.

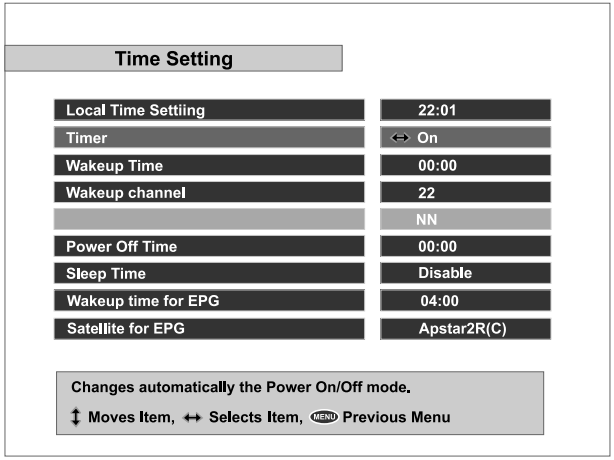
GMT

GMT is referred to the standard time of Greenwich. This cannot be changed.

Time Offset

The current time of the local area can be inserted. In another words, insert the time difference of the local time zone from the GMT. For example, if the local area is Seoul (the time difference from the GMT being 9), insert **9:00**. The time is adjustable by using the V-, V+ buttons,15 minutes at a time.

B. Timer



Use the V-, V+ buttons to select the **On/Off** mode. If the **Timer** item is set to **On**, the **Wakeup Time** item, the **Wakeup Channel** item and the **Power Off Time** item becomes adjustable.

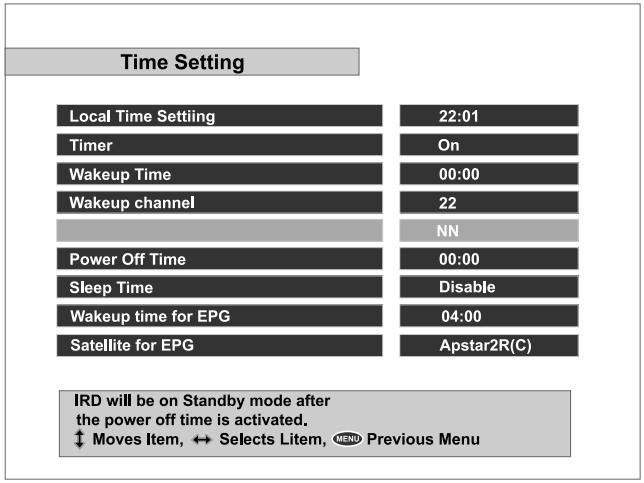
C. Wakeup Time

The **Wakeup Time** item sets up the time the PVR automatically turns on. Insert the preferable **Wakeup Time** by using the numeric buttons and the V-, V+ buttons on the RCU. To disable the wakeup funtion, make the **Timer** item **Off**.

D. Wakeup Channel

The **Wakeup Channel** item automatically turns the PVR to the preset channel when it automatically turns on by the **Wakeup** function.

E. Power Off Time



The **Power Off Time** menu sets the time of the PVR automatically turns off.

F. Sleep Time

The **Sleep Time** item is similar to the **Power Off** menu. The **Sleep Time** function turns off after the adjusted sleep time.

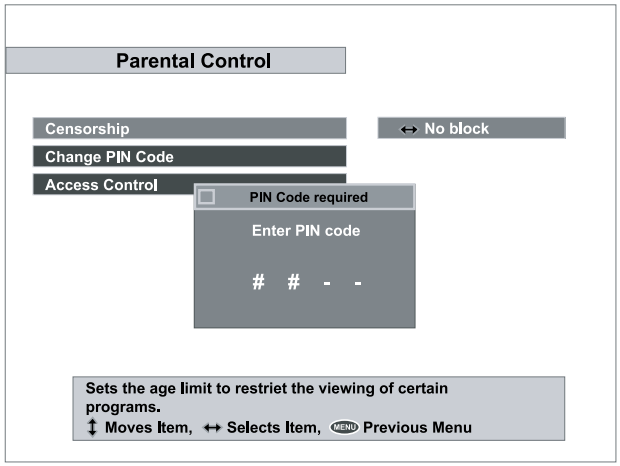
G. Wakeup time for EPG

The **Wakeup time for EPG** menu automatically turns the PVR on if this menu is enabled. The PVR will record EPG data to HDD from the desired time.

H. Satellite for EPG

If wakeup time for EPG menu is enabled, you have to select the desired Satellite you want to record EPG data to HDD.

I-2. PARENTAL CONTROL


Parental Control
Censorship
↔ No block
Change PIN Code
Access Control
PIN Code required
Enter PIN code
- -
Sets the age limit to restriet the viewing of certain programs.
↕ Moves Item, ↔ Selects Item, MENU Previous Menu

The age rating control, the PIN(Personal Identification Number) Code and the passwords to various menus can be configured. The PIN Code box will automatically appear when this menu is selected. The default PIN Code is **0000**

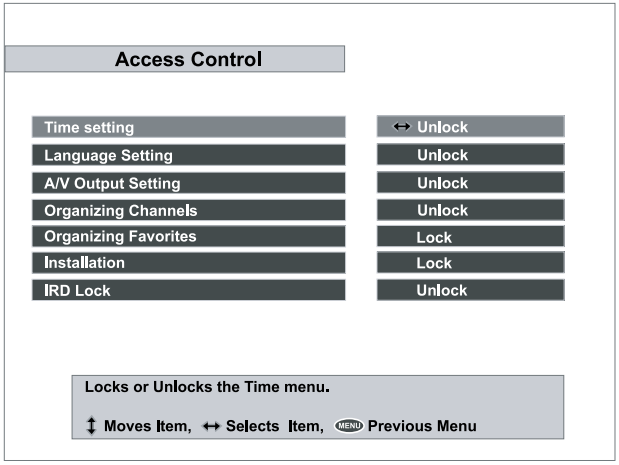
A. Censorship

The **Censorship** tem blocks programs according to each specific setting.
Use the V-, V+ buttons to select the items below.
No Block: Access to everyone.
4~18(age): Inaccessible for viewers within each minimum age limit.
Total Block: Access to no one.
If the channel is limitation free, the block function will not work.

B. Change PIN Code

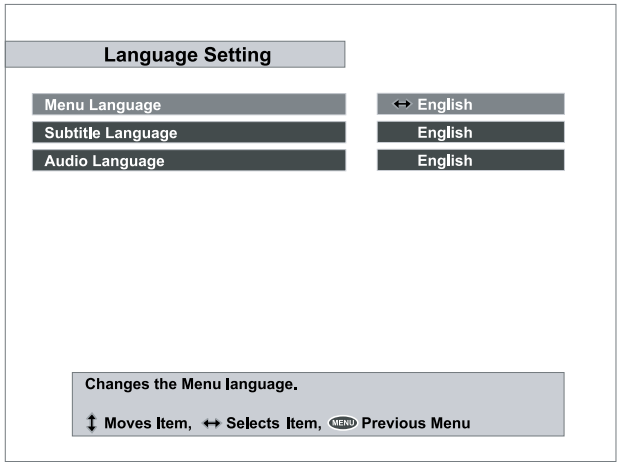
Go to the **PIN Code** item to configure new PIN Code. Press OK button, and a box will appear on the screen. Enter the PIN code by using the numeric buttons on your RCU.

C. Access Control



The **Access Control** menu controls access to 7 items: **Time Setting**, **Language Setting**, **A/V Output Setting**, **Organizing Channels**, **Organizing Favorites, Installation** and **IRD Lock** . Press the V-, V+ buttons to **Lock**/**Unlock** the access. **Locking** means controlling the access to specific menus with the PIN Code system. The default PIN Code is **0000**.

I-3. LANGUAGE SETTING



There are many languages available for the menu. The default language is English.

A. Menu Language

It is an item for changing the language of the **Main** menu.
Select the language which the menus will be shown in.
[English / French / German / Italian / Spanish / Arabic / Greek / Turkish / Danish / Swedish / Norwegian / Dutch / Russian]

B. Subtitle Language

It is an item for changing the language of the subtitle.
As long as the services support, the subtitle language is changeable by pressing button on your RCU.
[English / French / German / Italian / Spanish / Arabic / Greek / Turkish / Danish / Swedish / Norwegian / Dutch / Russian]

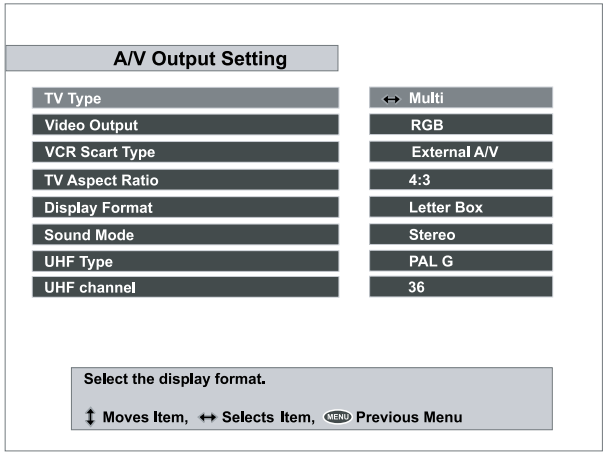
C. Audio Language

It is an item for changing the language of the Audio.

The first audio language is set to English. If more than one audio language is transmitted, you may select one language among several languages transmitted by pressing button.

English / French / German / Italian / Spanish / Arabic / Greek / Turkish / Danish / Swedish / Norwegian / Dutch / Russian]

I-4. A/V OUTPUT SETTING



The PVR has many A/V Outputs. Control this menu properly according to external components connected to the PVR. Configurations concerning Audio and Video can be made here.

A. TV Type

Enables the setting of the TV standard. For automatic PAL/NTSC selection, set to **Multi**.

B. Video Output

Select the mode of Video output among RGB and CVBS on TV Scart by using V-, V+ buttons.

C. VCR Scart Type

Select the VCR scart type either Standard or External A/V. In case of“External A/V”, TV Video Output will be switched to VCR input automatically by pressing “TV/Sat” button on the RCU.

D. TV Aspect Ratio

Enables the setting of the screen format of the TV. Select 4:3 or 16:9 mode by using V-, V+ buttons.

E. Display Format

Enables the setting of the screen format of the TV. Select the **Letter Box** or **Center extract** mode of 4:3 pictures by using V-, V+ buttons.

F. Sound Mode

Allows you to configure the sound mode. Select the **Stereo**, **Mono**, **Left** and **Right** modes by using the V-, V+ buttons. The Sound mode is configurable later on by using the SAP button on your RCU.

G. UHF Type

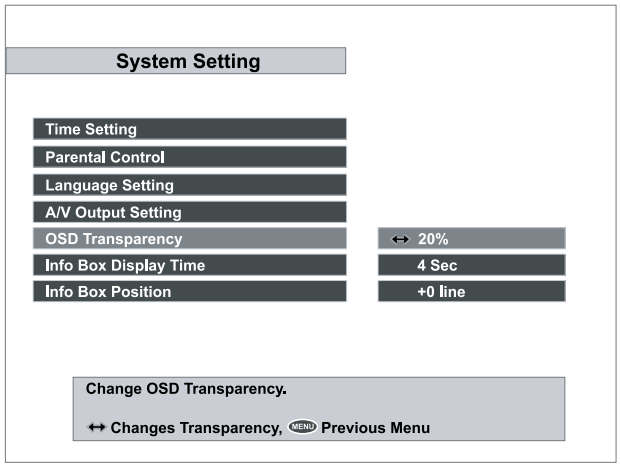
Allows you to change the UHF Type. Select the **PAL G**, **PAL I**, **PAL K** modes by using the V-, V+ buttons.

H. UHF Channel

Choose the UHF Channel by using the V-, V+ buttons. The default UHF channel is CH36.

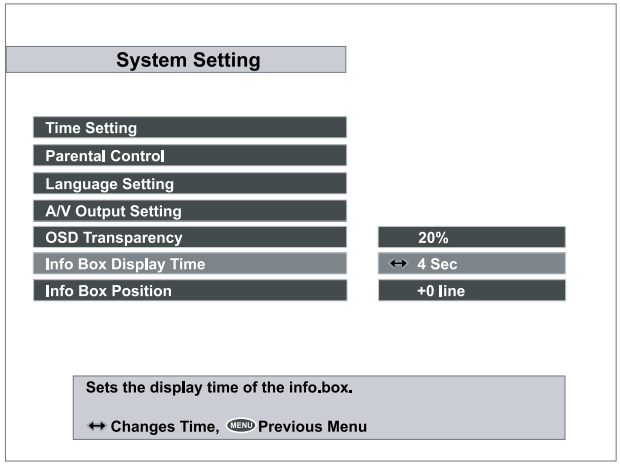
I-5. OSD Transparency

Adjusts the OSD transparency level of all kinds of menus. The available levels are ranging from 0% to 50%.



I-6. Info Box Display Time

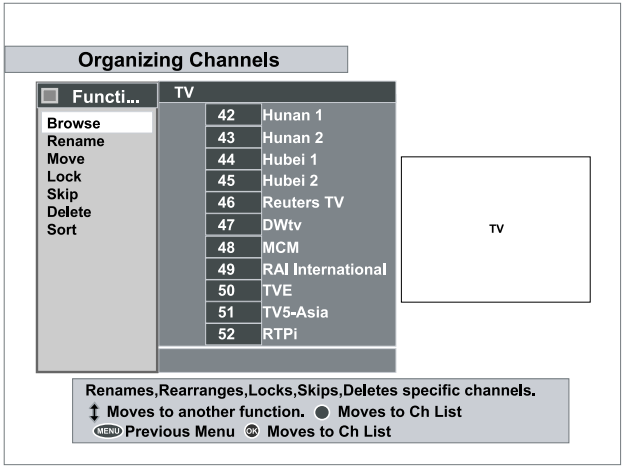
Adjusts the time-out of the Info Box. Sets the period of time the Info Box is displayed on screen. The adjustable time is from 0 to 30 seconds.



I-7. Info Box Position

Adjusts the position of the Info Box. Allows you to change the position by using the V-, V+ buttons.

II. ORGANIZING CHANNELS



This mode can be used to rename, reorder, lock, hide and delete TV Services.

A. Browse

Press OK button. Now, browsing through the **Organizing Channels** is possible. Press assigned buttons on the help message.

B. Rename

Use P+ , P- buttons to select **Rename** item and press the OK button to move the cursor to the Channel List. Press OK button to display keyboard, and rename the channel. After renaming it, be sure to save it by pressing the OK button at **Save** item.

C. Move

You can reorder and move the service to the preferred position. Mark the desired channel to move and press OK button. Use P+ , P- buttons to choose the **Move** mode.

D. Lock

You can restrain and lock the services. From here, locking (and later unlocking) channels in any of the lists is possible e.g. in order to prevent children from watching it. If a locked service is selected, enter the PIN code in order to enjoy it.

E. Skip

You can hide and skip the services. In order to unlock the skip function, press button on the skipped channel. The skipped channels will not be visible on channel list.

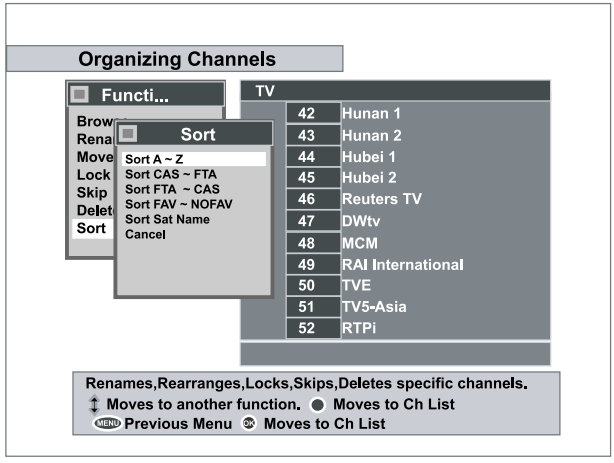
F. Delete

Press button to delete channels. The delete function differs from the skip function as it deletes the channel completely. Whereas, the skip function just makes the channel invisible.

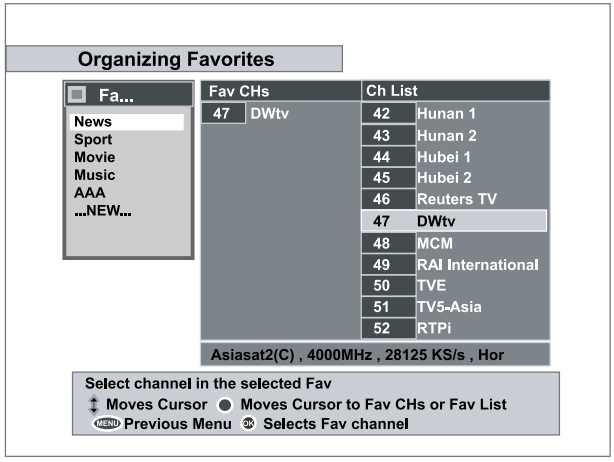
NOTE: Deleted channels are permanently deleted. The only way to reobtain is to perform a new channel search.

G. Sort

You can sort and rearrange the sequence for the services.



III. ORGANIZING FAVORITES



This mode is helpful in adding and deleting services to and from the favorite group.

Under the menu **Organizing Favorites**, there are three different modes: **Fav List** , **Fav CHs** and **Ch List**. On the **Fav List** mode, four standard lists are selected as the default menus: **News**, **Sports**, **Movie** and **Music**. Up to 10 lists including these lists can be added and renamed.

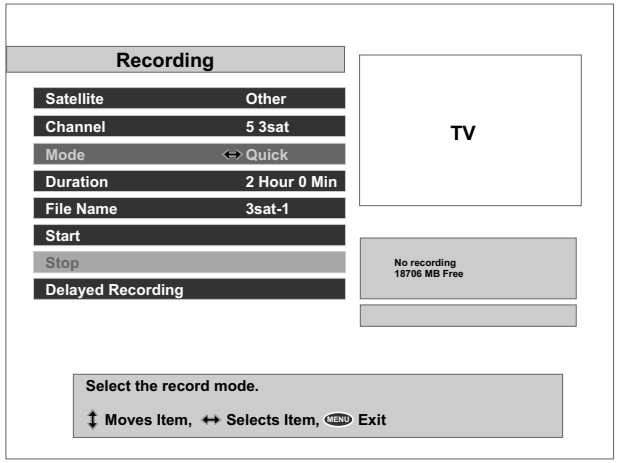
When deleting a service, select a service in the **Fav CHs** section and press the assigned button on the help message.

To add services into Favorites, locate the cursor to the desired service and press OK button.

Even in the Favorite CHs, you will see basic satellite & Channel information.

IV. Recording

This menu shows some options for recording.



IV-1. Satellite

Press OK button to display the satellite list. Select a satellite that includes the channel to be recorded.

IV-2. Channel

Press OK button to display the channel list. Select a channel to be recorded.

IV-3 Mode

There are two recording modes.
To record the selected service immediately, select the **Quick** mode.
To record current event including the data of the time shifting buffer, select **Current Event** mode. The **Current Event** mode is valid only when the event information of the channel exists.

IV-4. Duration

To change the duration of the recording time, press V- or V+ button.

IV-5. File Name

To change the file name of the service to be recorded, press OK button at this item.

IV-6. Start

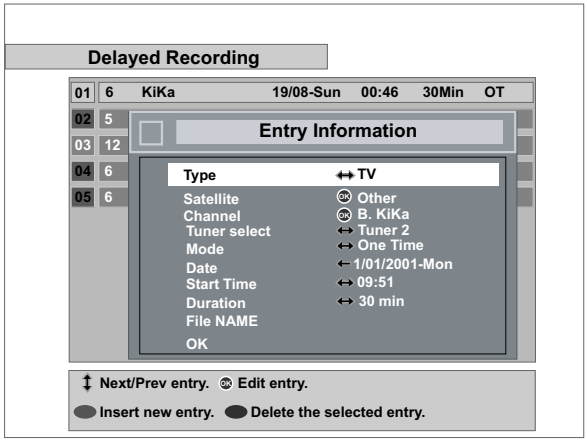
To start recording, press OK button at this item.

IV-7. Stop

To stop recording, press OK button at this item.

IV-8. Delayed Recording

In this menu you can reserve delayed recording.



A. Satellite

Press OK button to display the satellite list. Select a satellite that includes the channel to be recorded.

B. Channel

Press OK button to display the channel list. Select a channel to be recorded.

C. Mode

There are 5 different modes.
Select **One Time** to record the channel only once.
Select **Every Day** to record the same channel at the same time of every day.
Select **Weekly** to record the same channel at the same time on the same weekday.
Select **Every Weekend** to record the same channel at the same time on every weekend. This menu is enabled when the **Date** menu is set to Saturday or Sunday.
Select **Every Weekday** to record the same channel at the same time on every weekday. This menu is enabled when the **Date** menu is set from Monday to Friday.

D. Date
To change the recording start date, press V- or V+ button.

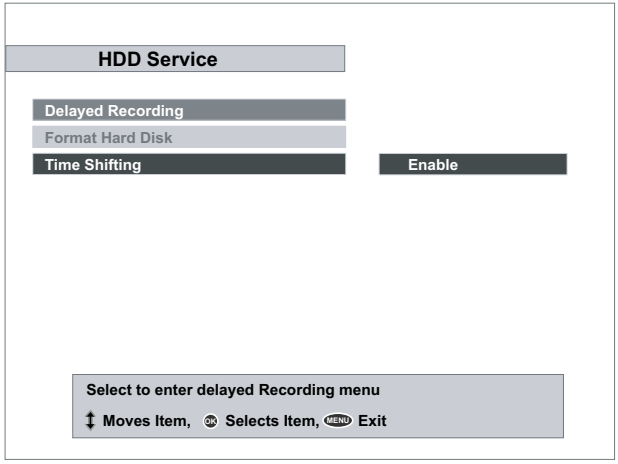
E. Start Time
To change the recording start time, press V- or V+ button or enter the time using the numeric buttons

F. Duration
To change the recording duration, press V- or V+ button.

G. OK
To confirm the setting for the delayed recording, press OK button.
Be sure to confirm it if you want to register the current setting for delayed recording.

V. HDD Service

You can use this menu to manage the HDD and the functions related to the HDD



V-1. Delayed Recording

Refer to IV-8. Delayed Recording.

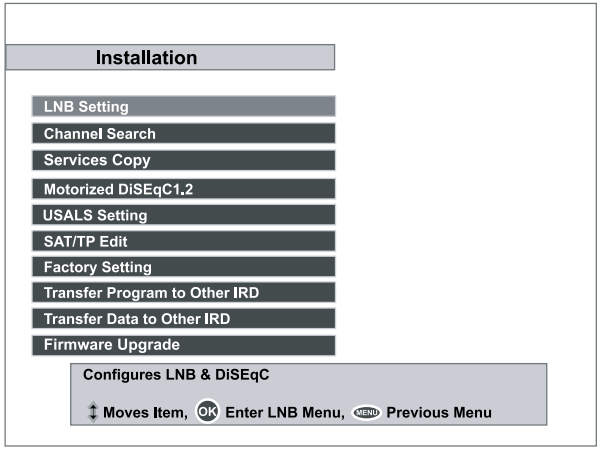
V-2. Format Hard Disk

To format the HDD in PVR, press OK button at this item.
Format Hard Disk will delete all the data and the files in HDD permanently.
If a new HDD is installed, it should be formatted by this PVR. The file structure of the PVR is different from that of PC.
You cannot use the Time shifting, Recording and Playback functions with an unformatted HDD.

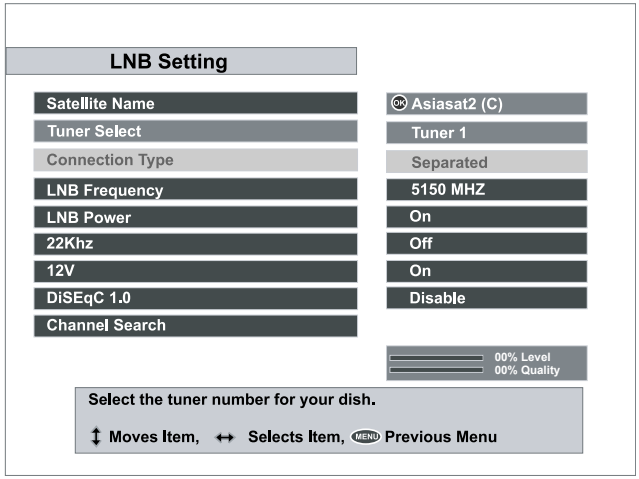
V-3. Time Shifting

To enable time shifting function, select **Enable**.
If the **Time Shifting** is enabled, this PVR records the current channel in normal play. And, you can take advantage of the time shifting function.
To disable time shifting function, select **Disable**. If you don't want to use time shifting function, disable the time shifting to reduce the power consumption.

VI. INSTALLATION



VI-1. LNB Setting



The Low Noise Blockdown Converter (LNB) amplifies the signal received by the satellite dish and lowers the frequency of the signal. The signal is then fed from the LNB at the dish via cable to the PVR.

For the LNB Settings, move the cursor to **Installation** item and press OK button. Then, move the cursor to the **LNB Setting** item and press OK button.

A. Satellite Name

Press the OK button to display the Satellite List. The Satellite name list is put in alphabetical order. Select one of the preprogrammed satellites that correspond to the value of the antenna. If the desired satellite name is not in the list, then select **Others**

B. Tuner Select

Select a tuner for channel searching from the selected satellite.

C. Connection Type

If two tuners share one LNB as the diagram 2-2) on page 12, select **Loop Through**. If a service is being recoded, the other tuner can receive only the signal of the same band and polarity as being recorded in this configuration.

If the tuners are connected to separated LNBs (or Dual LNB), select

There is no restriction as in the **Loop Through** configuration.

D. LNB Frequency

Select the L.O. Frequency set to antenna. The LNB Frequency of 5150, 9750, 10600, 10750, 11475 MHz or Universal can be selected by using the V- or V+ button.

NOTE: If the Universal LNB is selected, both 9750 and 10600 MHz are supported at the same time, and therefore the 22 KHz tone setting is not required.

E. LNB Power

Select LNB power ' **On**' for internal and ' **Off** ' for external.

F. 22 KHz

If you are using a 22 KHz tone switch box, make 22 KHz tone switch enable or disable to select LNB or antenna.

G. 12V

Use it if the switch box is controlled by 12V DC.

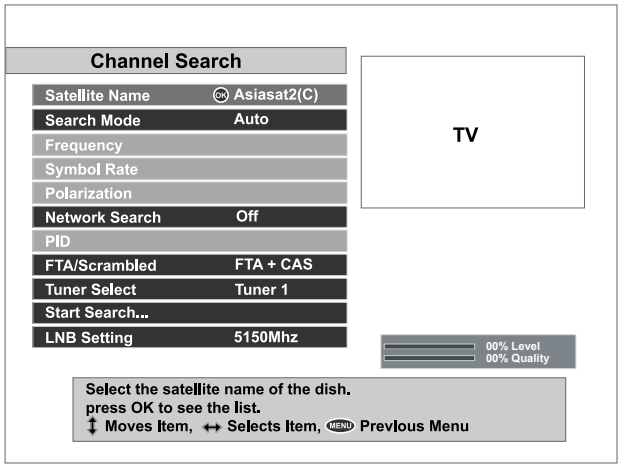
H. DiSEqC 1.0

The PVR is designed to be DiSEqC 1.0 compatible. This allows multiple antennas to be connected to the PVR at the same time. If you are using two or more fixed antennas or LNBs, then it is recommended to use a DiSEqC 1.0 switch.
Select from **1 of DiSEqC** to **4 of DiSEqC**, **Mini A**, **Mini B** or **Disable** according to the option or the configuration of DiSEqC switch box or antenna.

I. Channel Search

To go to **Channel Search** menu directly from **LNB Setting** menu, press OK button at this item.

VI-2. Channel Search



A. Satellite Name

Press the OK button to display the Satellite List Box. The Satellite name list is put in alphabetical order. Select one of the preprogrammed satellites that correspond to the value of the antenna. If the desired satellite name is not in the list, then select **Others**.

B. Search Mode

There are 4 search modes, **Auto**, **Manual**, **Advanced** and **SMATV**. The **Auto** mode enables to search using the information the PVR has. On the other hand, there will be a need to know in advance the frequencies and the symbol rates before using the **Manual** mode. On the **Advanced** mode, enter the Audio PID, Video PID or the PCR PID. The **SMATV** mode is used to special purposes on satellite master antenna TV system.

C. Frequency

Enter the Transponder's Frequency by using the numeric buttons on your RCU.

D. Symbol Rate

Enter the Transponder's Symbol Rate by using the numeric buttons on your RCU.

E. Polarization

Choose the type of polarization, either the **Horizontal** or the **Vertical**.

F. Network Search

This **Network Search** item can be used if the **Search mode** is set to the **Manual** or **Auto** mode. If the **Network Search** item is set to **On** and the NIT (Network Information Table) is available, the Transponder's information can be found.

G. PID

Press OK button to enter Video,Audio and PCR PID's.

1) **Video PID**
   Insert the Video PID by using the numeric buttons on your RCU.

2) **Audio PID**
   Insert the Audio PID by using the numeric buttons on your RCU.

3) PCR PID

Insert the PCR PID by using the numeric buttons on your RCU.

4) SAVE

To ensure the above Video,Audio and PCR PID change, press OK button at this item.

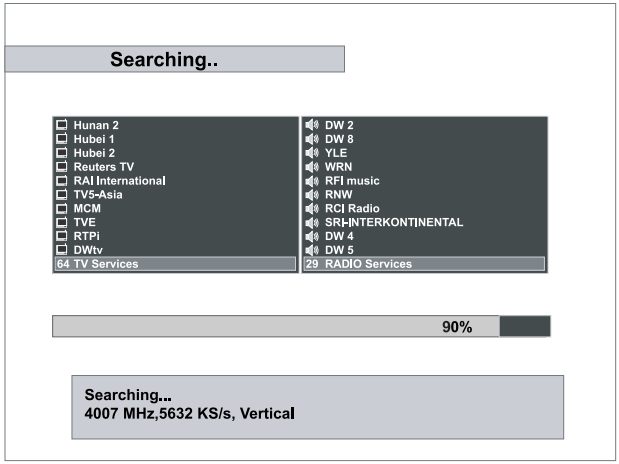
H. FTA/ Scrambled

Choose your favorable channels among **FTA only**, **CAS only** and **FTA+CAS**.

I. Tuner Select

Select a tuner for channel searching from the selected satellite.

J. Start Search...

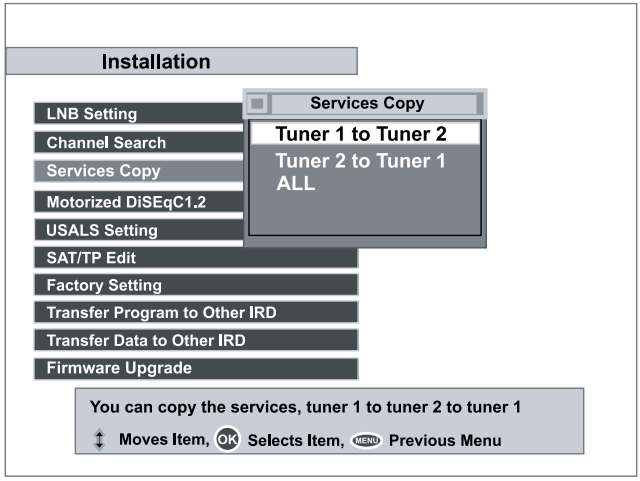


Searches for digital channels after the configuration of the LNB is over. To stop the searching process on the way, press either the MENU button or the EXIT button. This menu will be shown as long as the PVR is searching for channels. All channels found will be listed in two columns on the screen; with TV channels in one column and Radio channels in the other. Please note that the search procedure may take a few minutes. When the search procedure is completed, the screen will show how many TV and Radio channels have been found. Press OK button to save the channels.

K. LNB Setting

To go to **LNB Setting** menu directly from **Channel Search** menu, press OK button at this item.

VI-3 . Service Copy



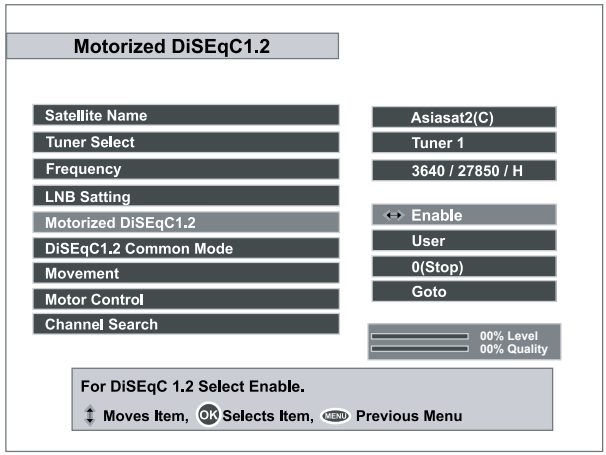
In this menu, you can copy the existed channel. Between Tuner 1 and Tuner 2.

A. Tuner 1 to Tuner 2
Copy the service list of Tuner 1 to that of Tuner 2.

B. Tuner 2 to Tuner 1
Copy the service list of Tuner 2 to that of Tuner 1.

C. All
Add the service list of Tuner 1 and Tuner 2 and save it to that of Tuner 1 and Tuner 2.

VI-4 . Motorized DiSEqC 1.2



If you have DiSEqC 1.2 motorized system, then you can use the DiSEqC 1.2 functions.

. Satellite Name

A selection of satellite names that will be used to identify a motor position.

. Tuner Select: Select a tuner, connected with DiSEqC 1.2 system.

. Frequency: Selects the frequency to catch the strong signal.

. DiSEqC Command Mode : Change the current mode between **User** and **Installer** modes.

-**User**: This mode is used to fine-tune the position of the motor for better reception.

-**Installer**: This mode is used to search for the position of a satellite manually.

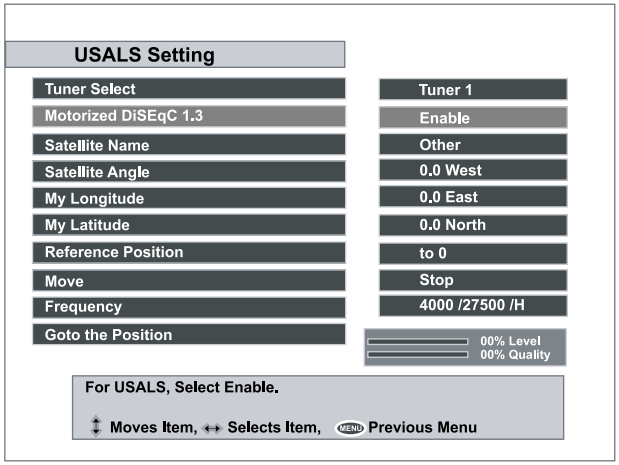
. Movement: In case of **User** mode, the movement is adjustable by fine-tuning.
In case of **Installer** mode, the movement is adjustable by **East** , **West** going command.

. Motor Control

- **Goto** : Moves the motor to the stored position of the selected satellite.
- **Store** : Stores the current position of the motor for the selected satellite.
- **Reset** : Resets all stored position of the motor relative to the "0" position (**Installer mode only).**
- **Recalculate** : Recalculates the position of the Stab Rotor motor.
- **Limit E** , **Limit W**: Limits east and west position.
- **Limit Off** : Removes the limitation.
- **Goto Ref** Goes to reference.

. Channel Search: After saving the DiSEqC configuration at the highest signal quality, press OK button to start channel searching of the selected satellite.

VI-5. USALS Setting



USALS is very convenient motorized DiSEqC System that support DiSEqC 1.3 command and also can get the satellite position automatically if you know geographical location. Basically,the listed satellites have the Longitude saved and therefore the angle of the satellite can be calculated without problem.

If you have USALS motorized system, then you can use the USALS as followings.

. **Tuner Select**: Select a tuner, connected with USALS system.

. **Satellite Name**: Select a satellite that will be used to identify a motor system.

. **Satellite Angle**: It is the Longitude of the selected satellite and it can be set automatically in case of selecting a satellite name.

. **My Longitude**: It means the angle of Longitude and you can select the direction of EAST and WEST by Numeric or V- , V+ button.

. **My Latitude** : It means the angle of Latitude and you can select the direction of SOUTH and NORTH by Numeric or V- , V+ button.

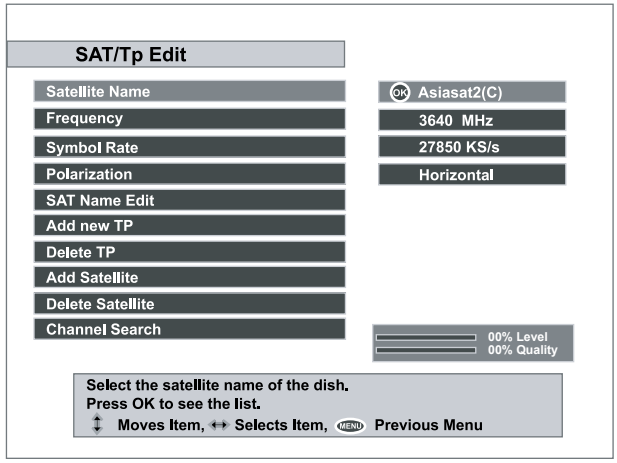
. **Reference Position** : Goes to Reference position (O˚)

. **Move** : After selecting “goto the position” menu, it is adjustable by fine-tuning and V- , V+ button moves to anti-clockwise and clok-wise respectively.

. **Frequency** : Selects the frequency to catch the strong signal.

. **Goto the position** : After setting the Longitude, Latitude and the longitude of the selected satellite, this menu is used when you want to move the desired direction (position)of the dish, saved before. Its moving limit is ±65˚.

VI-6. SAT/Tp Edit



A. Satellite Name

By pressing OK button, you can see the listed satellite names.
Then, using P+ , P- , V- or V+ buttons, you can select satellite.

B. Frequency

By pressing OK button, you can see the all frequencies of transponders of a satellite, and also you can select a frequency. Or, by pressing P+ , P- , V- or V+ buttons, you can select and view a frequency one by one.

C. Symbol Rate

You can see the symbol rate of the specified satellite on the right side of the menu.

D. Polarization

You can select the polarization from **Horizontal** and **Vertical**.

E. SAT Name Edit

You can change the name of the satellite by this menu.
Press OK button to display a keyboard. There are several items such as **Other**, **Save** and **Space** in the keyboard.
By selecting **Other** item, you can see a new alphabet character sets. The **Space** item means a space between two characters. And the **Save** item is used to confirm the new name of the satellite.

Notes: You can move the cursor in the satellite name row by V- or V+ and column by P+ or P- button.

F. Add New TP

In case of new transponder information is added by broadcaster, you can add new TP(transponder) information and enjoy new services.
Before adding new TP information, you should know the frequency, symbol rate and polarization types.
After adding new information, you should confirm the new information by pressing OK button at **OK** item.

G. Delete TP

By selecting this item, you can delete the selected TP (Transponder) information.

H. Add Satellite

Using this menu, you can add new satellite name by keyboard, then it will be added in the Satellite Name menu.

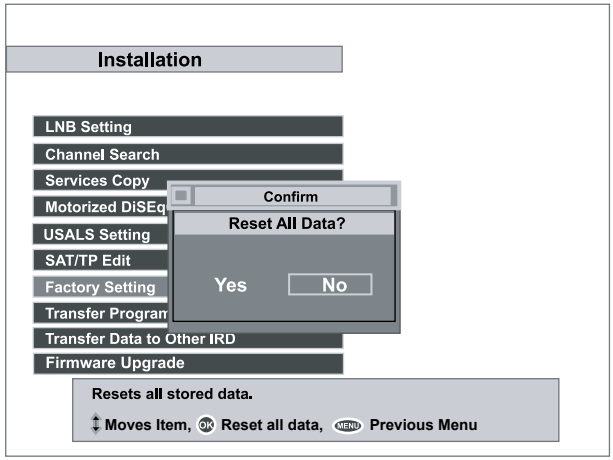
I. Delete Satellite

By selecting this item, you can delete the selected satellite information.

J. Channel Search

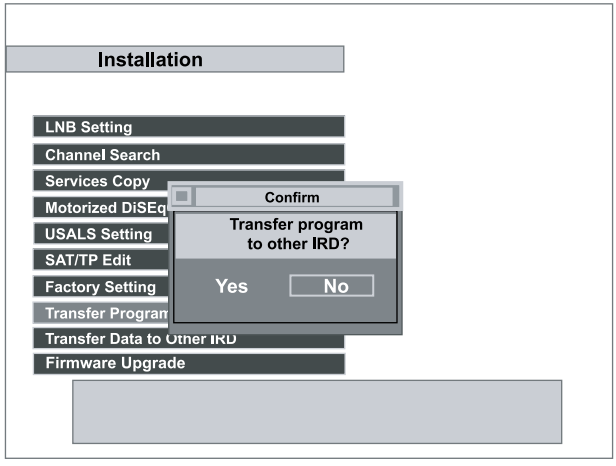
It is used to go to **Channel Search** menu directly from **SAT/Tp Edit** menu.

VI-7. Factory Setting



All the stored data can be reset just like it was manufactured.

VI-8.Transfer Program to Other PVR



It is used to transfer PVR program to other PVR for upgrading the PVR.

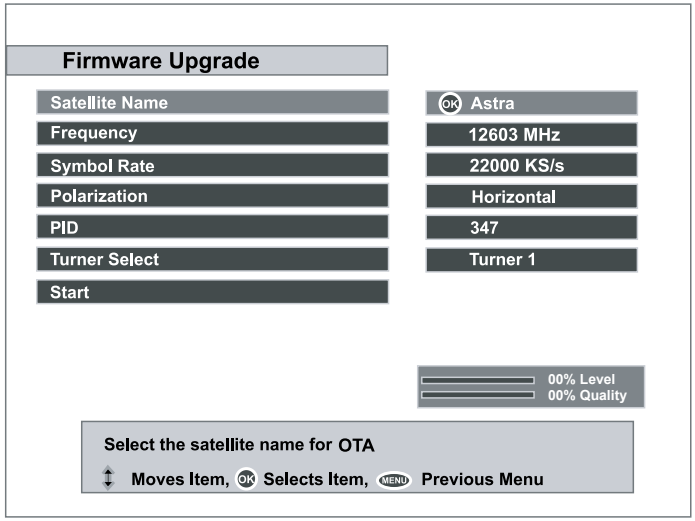
Notes: Please proceed this menu with connecting the PVR of same model and same specification.

VI-9.Transfer Data to Other PVR

It is used to transfer PVR Data such as satellite/TP information to other PVR for upgrading the PVR.

Notes: Please proceed this menu with connecting the PVR of same model and same specification.

VI-10. Firmware Upgrade



At this menu, you can download the latest PVR software from the Astra Satellite. The TP details are as bellows.

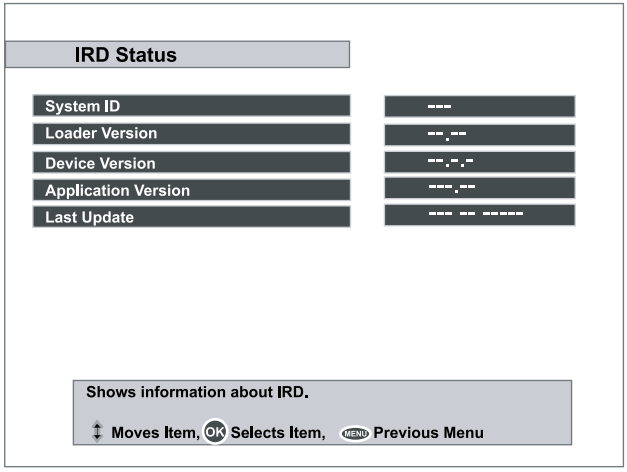
. FREQ : 12603 MHz
. S / R : 22000 KS/s
. Polarity : Horizontal
. PID : 347

For OTA(Over - The - Air), it takes around 10minutes to download software from the Satellite.

VII. INFORAMTION

You can check the PVR version and refer the calendar.

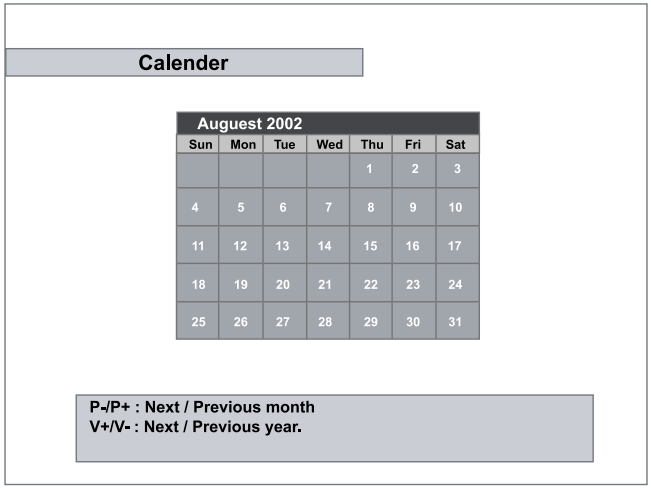
VII-1. PVR STATUS



Check the PVR's system information. It shows the PVR's:

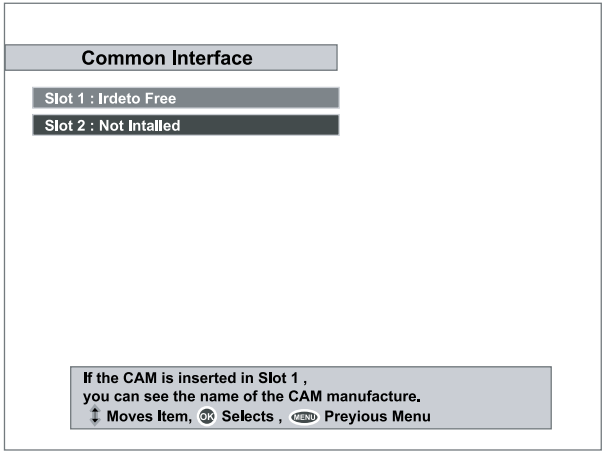
- System ID
- Loader Version
- Device Version
- Application Version
- Last Update

VII-2. CALENDAR


Calender
August 2002
Sun Mon Tue Wed Thu Fri Sat
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
P-/P+ : Next / Previous month
V+/V- : Next / Previous year.

Press the V- or V+ button to select the year. Press the P+ or P- button to select the month.

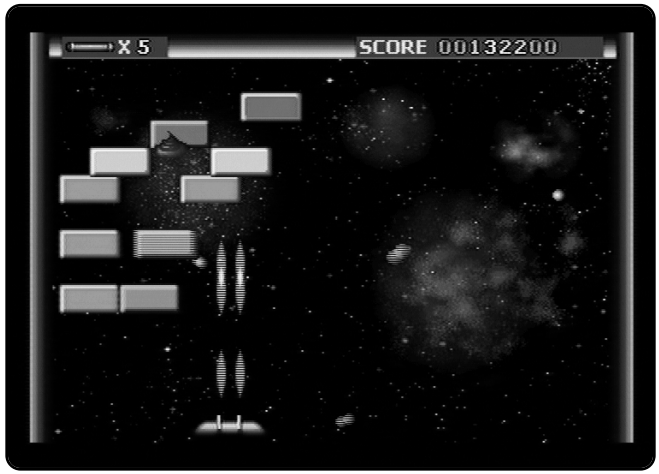
VIII. COMMON INTERFACE


Common Interface
Slot 1 : Irdeto Free
Slot 2 : Not Intalled
If the CAM is inserted in Slot 1 ,
you can see the name of the CAM manufacture.
Moves Item, OK Selects , MENU Preyious Menu

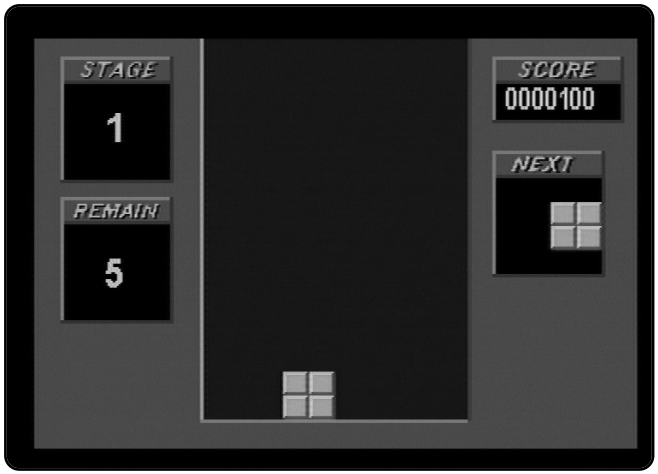
The menu differs according to each inserted CAM. If the module has not been installed yet, the phrase 'Not Installed' will be accordingly indicated.

IX. GAME

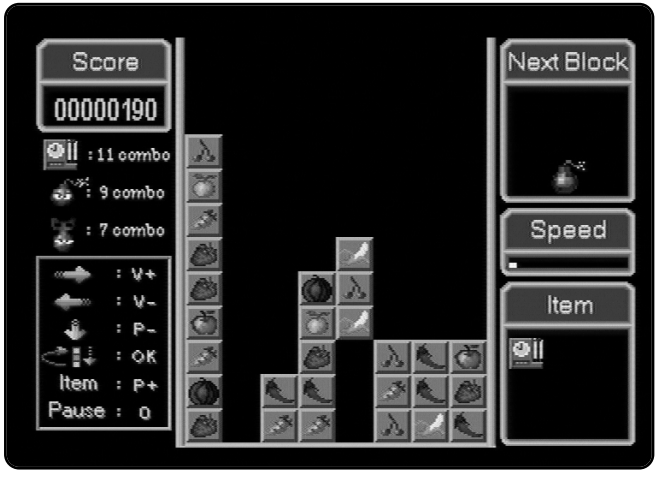
IX-1. ExBlock



IX-2. Bricks Lay



IX-3. Bomb Hexa



HOW TO RECORD AND PLAYBACK THE PVR

Time Shifting

1. To enable Time Shifting, the **Time Shifting** option should be enabled.
   To find the **Time Shifting** option menu, follow the steps below.

   Main Menu ➔ **HDD Service** ➔ **Time Shifting** ➔ **Enable**

2. Press button to display **Time Shifting** progress bar.

3. To go to the desired playback position, press button or button. This function is valid while the Time Shifting progress bar is displayed.

4. To remove the Time Shifting progress bar at once, press or **PLAY** button.

5. To play the live video, press **STOP** button.

6. To start Instant Playback, press button. The start position of the playback goes 10 seconds back per each pressing of button.

Recording while Time Shifting

1. Press button to display **Time Shifting** progress bar.
2. To go to the desired position, press button or button.
3. Press **RECORDING** button to start recording.
4. The recording will be started from the selected position.
5. Press **STOP** button to stop Time Shifting.

6. Press **STOP** button again to stop recording.

Caution : If the recording time is less than about 1 minute, recording will not be done successfully.

Recording, Checking and Editing reserving

To record services, refer to the following steps. There are four kinds of recording references.

Caution : If the recording time is less than about 1 minute, recording will not be done successfully.

1.Immediate Recording by **RECORDING** button

a. Recording

Press **RECORD** button to record the channel you are watching.
To specify the stop time, go to **Recording** menu and modify **Duration** item.
To go to the **Recording** menu, press **RECORDING** button once more.

b. Checking

A **Recording Icon** ● will be displayed on the upper rightmost of the TV screen if the recording is in progress. For more information, press **CHECK** button or **INFORMATION** button.

c. Stop

Press **STOP** button and select **Yes** to confirm the immediate stop.

2.Immediate Recording by Menu Selection

a. Recording

To go to **Recording** menu, press button and select **Recording** item by pressing button.

Select the options that you want to record with. Select **Start** item and press button.

For detailed information, refer to the explanation of **Recording** menu in **Menu operations**.

b. Checking and modification

A **Recording Icon** ● will be displayed on the upper rightmost of the TV screen if the recording is in progress. For more information, press **INFORMATION** button or **CHECK** button.

To check and modify the recording options, go to **Recording** menu.

c. Stop

Press **STOP** button and select **Yes** to confirm the immediate stop.

Otherwise, go to **Recording** menu and press button at **Stop** item.

3. Delayed Recording

a. Recording

Go to **Recording** menu and press button at the **Delayed Recording** item.

Set the options that you want to record with. Press button at **OK** item.

For detailed information, refer to the explanation of **Recording** menu in **Menu operations**.

b. Checking

To check the reserved recordings, go to **Edit Reservation** menu of **Recording** menu.

c. Canceling

To cancel the reserved recording, go to **Edit Reservation** menu of **Recording** menu. Press button at **Cancel** item.

4. Recording by EPG

a. Recording

Press **GUIDE** button to display EPG. Select a service that you want to record, and press **RECORDING** button. Instead of **RECORDING** button, two times pressing of button is valid for delayed recording.
The **Recording mark** **R** will be displayed.

b. Checking

Press **GUIDE** button to display EPG. The reserved services for delayed recording will be marked with a **Recording mark** **R** .

c. Canceling

Press **GUIDE** button to display EPG.
To cancel a reservation of delayed recording, select the service you want to cancel and press **RECORDING** button again. Instead of **RECORDING** button, button is valid. The **Recording mark** **R** will disappear.

Playback a Recorded Service

1.Press the red button to display the recorded service list.

2.Select a recorded service at the list.

3.Press button to start playback.

Stop

1.To stop playback, press **STOP** button.

2.This function is available for playback.

Pausing

To pause the picture or playback, press **PAUSE** button.
Press **PAUSE** button or **PLAY** button to quit pausing.

1. Pausing from live video

If the PAUSING is kept more than 5 seconds with enabled **Time Shifting** mode, the play mode is changed to time-shifted playback. The video continues from the paused image when resumed from PAUSING.

2.Pausing from Time Shifting

The video continues from the paused image when resumed from PAUSING.

3. Pausing from Playback

The video continues from the paused image when resumed from PAUSING.

Slow Motion Playback

1. To playback in slow motion(without sound), press the **SLOW** button.
2. Slow motion speed can be adjusted by pressing the **SLOW** button repeatedly.
3. There are 7 steps in slow motion playback.
4. Press **PLAY** button to resume playback with normal speed.
5. The slow motion function is available for the playback and the time-shifted playback.

Fast Motion Playback

1. If there is a **Time Shifting** or **Playback** progress bar, remove the progress bar by pressing **PLAY**(▶) button.

2. Press ▶▶ button for fast motion playback. To change the playback speed, press ▶▶ button repeatedly.

3. There are 4 steps in fast motion playback.

4. Press **PLAY**(▶) button to resume playback with normal speed.

5. The slow motion function is available for the playback and the time-shifted playback.

Fast Forwarding and Rewinding

1. Press ▶ button to display Time Shifting or Playback progress bar.

2. To go to the desired playback position, press ◀◀ button or ▶▶ button. This function is valid while the progress bar is displayed.

3. To remove the progress bar at once, press ▶ button.

Reverse Playback

1. Press ▶ button to display the Time Shifting or Playback progress bar.

2. To rewind with motion, press ◀◀ button without the progress bar.
   The reverse motion is not so much smooth as fast motion playback because of the limitation of the characteristics of MPEG signal.
   Sometimes you may encounter the message **The service is not running..** on the reverse playback of scrambled data. The message will be disappeared in a few seconds.

Bookmark

You can jump to a position directly by bookmark function in playback and time-shifted playback.
To search positions very quickly and easily, use bookmarks.

1. Adding a bookmark
   To add a bookmark, press **BOOKMARK** button at the position you want to add it.

2. Going to a bookmark
   Press **GO TO BOOKMARK** button to jump to the previous bookmark.
   Then, the PVR plays from the book marked position.

3. Deleting a bookmark
   To remove a bookmark, select the bookmarked position by **GO TO BOOKMARK** button and press **BOOKMARK** button.

4. 30 sencods forward
   If there is no bookmark, the PVR plays every 30 seconds forward by pressing **BOOKMARK** button.

Recording The Descrambled Live Service

1. Select the live video you want to record. Descramble the service with a proper CAM and smart card. The live service should play well with the proper CAM and smart card.

2. Start recording according to the recording procedure.

3. During recording, don't change the channel neither try the time shifting function.

Caution : If there is any disturbance such as channel changing or time shifting during recording, scrambled service will be recorded.
If the recording time is less than about 1 minute, recording will not be done successfully.

Descrambling Services

1. Select and play back a service you want to descramble. Descramble the service with a proper CAM and smart card. The live service should play well with the proper CAM and smart card.

2. Press button to display **Playback** progress bar.

3. To go to the desired position, press button or button.

4. Start playback. The video should be descrambled with a proper CAM and smart card. The fast/slow motion descrambling is possible by fast/slow motion playback.

5. Start recording by **RECORDING** Button.

6. The video displayed on TV will be recorded.

7. Press **STOP** button to stop recording.

8. Press **STOP** button again to stop playback

Caution : If the descrambling time is less than about 1 minute, descrambling will not be done successfully.

Copying from Recorded Service

1. Select and play back a service to copy it.

2. Press button to display **Playback** progress bar.

3. To go to the desired position, press button or button.

4. Start playback the recorded video you want to copy.
   The fast/slow motion copying is possible by fast/slow motion playback.

5. Start copying by **RECORDING** Button.

6. The video displayed on TV will be copied.

7. Press **STOP** button to stop copying.

8. Press **STOP** button again to stop playback

Caution : If the copying time is less than about 1 minute, copying will not be done successfully.

Cut Out Selected Region

1. Start playback a recorded service.
2. Press button to display **Playback progress** bar.
3. To specify one end of region, press the button with the progress bar.
4. Move the cursor by pressing (or) or (or) button.
5. To cut out selected region, press the button once more.

Time Shifting while Recording

During recording, Time Shifting is possible only in the recorded channel.

Zapping while Recording

1. With **Separated** mode in **LNB setting** menu.
   For the tuner being recorded with, all the channels in the same TP can be selected.
   For the other tuner, all the scanned channels can be selected.

2. With **Loop Through** mode in **LNB setting** menu.
   For the tuner being recorded with, all the channels in the same TP can be selected.
   For the other tuner, all the channels of the same polarity and the same band as being recorded channel can be selected.

Repeat mode

The repeat mode works only in playback mode. It does not work in time shifting mode. There are two repeat modes.

1. Repeating the whole selected service.

a. Start playback a recorded service.
b. Press ⏭ button without the progress bar to repeat the whole selected service.
c. Press ⏭ button once more to cancel the repeating playback.

2 Repeating the selected region.

a. Start playback a recorded service.
b. Press ▶ button to display **Playback progress** bar.
c. To specify one end of region, press the ⏭ button with the progress bar.
d. Move the cursor by pressing ⏩ (or V+) or ⏪ (or V-) button.
e. To specify the other end of region, press the ⏭ button once more.
f. Press ⏭ button once more to cancel the repeating playback.

TROUBLESHOOTING (Q & A)

Problem	Possible Causes	What to do
Nothing appears on the Front Panel.	The main power cable is not connected.	Check that the main power cable is plugged into the power socket.
No sound or picture, but the front panel shows the time or -- : --	PVR is in standby mode.	Turn the power ON.
No Picture, No Sound.	• The satellite dish is not pointing at the satellite. • No Signal or Weak Signal. • LNB is faulty. • The UHF Button is "pushed down".	• Adjust the dish. • Check the settings in one of the channel search submenus. • Check the cable connections. • Replace the LNB. • Get out of the UHF mode.
The Remote Control Unit (RCU) is not working.	• No Batteries. • The RCU is incorrectly aimed. • The PVR is in standby mode.	• Change the batteries (both). • Aim the RCU properly to the PVR. • Change the mode to the normal mode.
You have forgotten your secret PIN Code.		Contact your Service Provider.
Time Setting is wrong.	The Time is not set properly.	Adjust the Time on the Menu.
2 broadcasts overlap.	The channels are not configured properly on the RF mode.	Set the channels in the RF mode under the A/V setting of the Menu between 21 to 69 on the TV.
The CAM is not working.	The CAM is not installed properly.	Check that the CAM has been correctly inserted.
Black Screen.	The CAM is not working correctly.	Eject the CAM and reinsert it again.

SPECIFICATIONS

I. PVR SPECIFICATIONS

Item	Specification
Power	90 - 250VAC, 50 / 60Hz
Input Frequency	950 - 2150 MHz
DATA Service	1 RS - 232C, 115kbps
SCART	2 SCARTs : 1 VCR, 1 TV
A/V OUT	1Video / 2 Audio (left and right)
Digital Audio Out	SPDIF
LNB Power	Convertible 13.5/18V (500mA max)
Modulation / FEC Type	QPSK / Multiple convolution coding (DVB Compliant)
DiSEqC	DiSEqC 1.0 / 1.2 compatible
Tone Switching	22 KHz
RF Modulator	UHF Ch. 21-69 with PAL I/G/K
Specification	MPEG - 2/DVB Compliant SI
Video Compression	MP@ML in MPEG-2
Aspect Ratio	4:3 or 16:9
On-Screen Display	256 colors with full resolution
EPG	Supported
Common Interface	Viaccess , Irdeto , Cryptoworks , Conax, Nagravision , Mediaguard

II. CHANNEL PROCESSING

Item	Specification
Input Frequency Range	950 - 2150 MHz
Number of Channels	3500 TV Cannels and 1500 Radio Channels
Modulation	QPSK (DVB Specification)
Inner FEC	Rates: 1/2, 2/3, 3/4, 5/6, 7/8 (DVB Specification)
Input Symbol Rate	2 to 45 Ms/s
Connector Type	F Type (IEC 169 - 24 female)

Ⅲ. MPEG AUDIO

Item	Specification
Operation Mode	Mono , Left , Right and Stereo
Sampling Rates	32, 44.1 and 48 kHz
Resolution	18 bit digital to analogue Converters

Ⅳ. VIDEO SPECIFICATIONS

Item	Specification
Specification	Meets ETR 154 amended in ALM-95-021
TV System	PAL I ,G,K
Video Decoding	ISO / IEC 13818-2, MP@ML
Video Resolution	720 pixels ×576 lines ×25 frames per sec.

Ⅴ. RF MODULATOR

Item	Specification
Features	Input RF bypass Supported.
Connector	IEC Coaxial female 9.5 mm.(IEC 168-2)
Channel Range	CCIR UHF E 21-69 adjustable
Pre-Set Channel	Channel 36 (or TBD)

Ⅵ. POWER SUPPLY

Item	Specification
Input Voltage	90 - 250VAC, 50 / 60Hz
Type	SMPS
Power Consumption	Max.55Watt
Standby Power	10Watt
Protection	Separate internal fuse